"Math is Cool" Championships – 2005-06

Sponsored by:

4th Grade – April 21, 2006
Individual Contest

GENERAL INSTRUCTIONS

*Good sportsmanship is expected throughout the competition by all involved. Bad sportsmanship may result in disqualification. Calculators may not be used on any portion of this contest. Express all non-integer answers as fractions unless stated otherwise or it is a problem dealing with money, and in that case, a decimal answer should be given. For 5th and 6th grade, all fractions and ratios must be reduced. Units are not necessary unless it is a problem that deals with time and, in that case, am or pm is needed. However, if you choose to use units, they must be correct. Leave all answers in terms of **B** where applicable. Do not round any answers unless stated otherwise. Record all answers on the colored cover sheets in the answer column only. Make sure all answer sheets have all the information filled out at the top of the sheet. **Tests will be scored as a 0 if answers are not recorded correctly on the answer sheets. Blank answer sheets and answer sheets with no name will also be scored as a 0.**

INDIVIDUAL TEST - *35 minutes*

When you are prompted to begin, tear off the colored sheet and begin testing. Make sure your name and school are recorded on the answer sheet. This test is scored as a 1 or 0. Express all non-integer answers as fractions unless stated otherwise or it is a problem dealing with money and in that case, a decimal answer should be given. For 4th & 4th grade, make sure all fractions and ratios are reduced. Units are not needed except on questions that deal with time and, in that case, a.m. or p.m. is needed. If you choose to use units, you must use them correctly. Record your answers on the score sheet. No talking during the test.

Record all answers on the colored cover sheet.

1	Evaluate: 19267 - 17261
2	Jolanda bakes three pizzas, each consisting of 8 slices. How many slices did Jolanda bake?
3	If a TI-89 (graphing calculator) has 50 buttons, how many buttons are on 7 TI-89's?
4	How many hours are there in 4 days?
5	Evaluate: 213 times 489
6	If Ronaldo drove 223 miles from Bainbridge to Walla Walla, how long, in miles, will he have driven round trip if he takes the same route back?
7	What is the difference between the number of months in a year and the number of days in a week?
8	Jimmy paid $3.20 for 4 watermelons. How much did one melon cost, in dollars?

9	Pens cost 39 cents each. Tishi wants to buy 9 pens. How much will it cost, in dollars, to buy 9 pens?
10	Evaluate: 555 – 444 + 333 – 222 + 111
11	To hit a homerun, Roy must hit a baseball 300 feet. Roy hit the ball 138 feet. How much farther, in feet, must he hit the ball next time to hit a homerun?
12	Henry has a rose garden. He plants the roses in rows of 8 with 47 roses in each row. How many roses did he plant?
13	An odd number plus an even will always be even or odd?
14	If the moon is 250,000 miles from the earth, how long, in hours, would it take to get there if you travel at 250 miles per hour?
15	How many positive factors does 23 have?
16	Cheng has 4 lights that together consume 400 watts. After he turns 3 off, how many watts will be consumed if all bulbs consume watts equally?
17	Find the larger of two numbers whose sum is 6 and whose positive difference is 4?
18	Lafondah bought a shirt on sale at 50% off for $25. What was the original cost of the shirt, in dollars?
19	What is the remainder when 37 is divided by 11?
20	Evaluate $\frac{0}{2} + \frac{1}{2} + \frac{2}{2} + \frac{3}{2}$
21	Kyl Wellman and his 95 pounds of fighting fury can answer 65 calculus questions per hour. If he enters a calculus contest lasting 6 hours and answers all questions with no time to spare, how many questions did he answer?
22	I am thinking of a two-digit number less than 50. The difference between the digits is four. When the digits are multiplied together, the result is 5. What is the number?
23	What is the probability of rolling a number less than 4 on a fair 6 sided die?
24	What is the area of a circle of radius 9?
25	How many sides does a dodecagon have?
26	Sampson is four times as old as Biggerstaff who is twice as old as Silas. If Silas is 22, how old is Sampson, in years?
27	What is the median of 7, 12, 4, 60, 88, 9, 31, 14, 25, 36, 17?
28	William Faulkner's The Sound and the Fury is 567 pages long. If Will can read 20 pages a day, on what day after he starts reading will he finish the book?
29	Find two numbers whose product is 30 and whose difference is 13.

Challenge Questions

30	A rabbit and cat both run up a set of stairs. The cat takes the stairs 3 at a time and rabbit five at a time. What is the first step they both land on assuming they start on the ground?
31	What is the probability of rolling a sum of 4 on two six-sided fair dice?
32	What number belongs in the blank? 31 + 9 + 6 + 4 = 60 + 5 + 3 - __
33	Biff and Eho ran a race consisting of two unequal legs. Biff ran his leg in 8 minutes at a constant speed of 125 meters per minute. Eho ran his leg in 4 minutes at a constant speed of 110 meters per minute. How far, in meters, did Biff and Eho run in total?
34	Square "A" has 1/4th the area of square "B" who has a perimeter of 24. What is the perimeter of the smaller square?
35	Shashawnda received an 87%, 93%, 94%, and an 80% on four tests. What is the minimum percentage Shashawnda must get on the next test to have an average of 90% over the five tests?
36	What is the probability of drawing two cards of the same suit (Spades, Hearts, Clubs or Diamonds) from a standard deck of cards?
37	There are 19 heads in a field of ducks and camels and 62 legs. How many camels are in the field?
38	If today is August 27 and the digital clock shows 10:00 in the morning, how many more times will the clock show 10:00 that month?
39	If 3 men can drink 3 glasses of water in 3 minutes, how long will it take 5 men to drink 5 glasses?
40	John woke up at 9 AM. He spent 6 hours at school, followed by half that time at Basketball, and then half of time spent at Basketball was spent at dinner. At what time did John finish eating dinner? (Include AM or PM in the answer.)

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4th Grade – April 21, 2006
Team Multiple Choice Contest

TEAM MULTIPLE CHOICE - 15 minutes

This test is the only test where you will be penalized for incorrect responses. You will receive 2 points for a correct letter response, 0 points for leaving it blank and -1 point for an incorrect response. When you are prompted to begin, tear off the colored sheet, pass out a copy of the test to each team member, and begin testing. Since this is a multiple choice test, ONLY a letter response should be listed as an answer on the answer sheet.
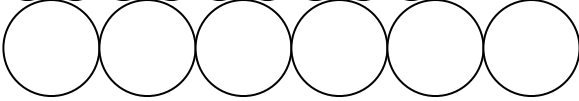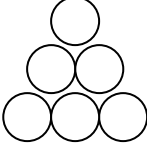
Andy's marbles

Andy has 200 marbles.
1/2 of them are red
1/4 of them are blue
1/8 of them are green
1/8 of them are yellow

1	How many red marbles does Andy have? A) 50 B) 100 C) 200 D) 400 E) Answer not given
2	Andy's friend, Mandy, tells him that his marbles are worth a lot of money. She says that if he sold all of his blue marbles he would get $25. If every type of marble costs the same, how much is his whole collection worth? A) $25 B) $75 C) $100 D) $200 E) Answer not given
3	What pie chart represents Andy's marble collection? A) B) C) D) E) Answer not given
4	If Andy wanted to give Mandy **exactly** half of his yellow marbles, how many would he give? A) 12 B) 13 C) 25 D) 4 E) Answer not given
5	Andy wants to play a game of marbles where blue marbles are not allowed. How many marbles can he use? A) 150 B) 200 C) 175 D) 50 E) Answer not given

6	Andy wonders how much bigger his yellow marbles are than his green marbles. He lines up some green marbles next to some yellow marbles. How many times bigger across are the yellow marbles?.

green

yellow

A) 1   B) 2   C) 3   D) 4   E) 5

7	Late at night one night, Andy needs two marbles of the same color – and he doesn't care what color. How many marbles does he need to pull out of the bag (he can't see them and they are the same size) to be sure he has at least two of the same color?

A) 5   B) 2   C) 26   D) 1   E) 200

8	Andy lets Mandy borrow his marbles. She decides to make triangles out of them. She makes a triangle by putting down one marble, then two below it, then three below those, like the picture on the right. If she keeps going until she makes a row with six marbles, how many marbles will it take?

A) 6   B) 15   C) 21   D) 36   E) 58

9	When Mandy is done playing with marbles, she writes the numbers 1 2 3 4 5 6 7 8 9 very big on a sidewalk. She wants to jump over one number at a time, so she steps on 2, then 4, then 6. What number does she want to step on next?

A) 1   B) 3   C) 8   D) 9   E) 4

"Math is Cool" Championships – 2005-06

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4th Grade – April 21, 2006

Team Contest

TEAM TEST - 15 minutes

When you are prompted to begin, tear off the colored sheet and give a copy of the test to each of your team members and begin testing. This test is scored as a 2 or 0. Express all non-integer answers as fractions unless stated otherwise or it is a problem dealing with money and in that case, a decimal answer should be given. For 5th & 6th grade, make sure all fractions and ratios are reduced. Units are not needed except on questions that deal with time and, in that case, a.m. or p.m. is needed. If you choose to use units, you must use them correctly.

1	Ten fish can eat 10 worms in 10 seconds. At this rate, how many seconds would it take 30 fish to eat 30 worms?
2	In writing the counting numbers 1 through 100, what is the 50th digit you would write?
3	A sign points north toward Motown with a distance of 92 miles, and south toward Notown, with a distance of 41 miles. Motown and Notown are along the same straight road. How many miles apart are Motown and Notown?
4	The rule for a certain number pattern or sequence is to subtract 3 from a number of the sequence to get the next number of the sequence. If the first number of the sequence is 13, what is the 4th number of the sequence?
5	Terry buys a dozen cookies for $4, then sells them again at 2 for $1. How many dollars profit does Terry make? (Profit is the amount of money you get to keep after you have paid your expenses out of your income.)
6	In a certain year, September had 5 Mondays but only 4 Tuesdays. On what day of the week was September 20th of that year?
7	Adding 30 to my number then subtracting 21 gives the same result as subtracting 81 from my number then adding what?
8	In the Kingdom of Boredom, the unit of money is the "duller" (symbol: D). There are 1-D bills, 2-D bills, and 3-D bills, but no 4-D or 5-D bills. In how many ways can you make exactly 6 dullers using these bills? (Consider two ways to be the same if they use the same bills, even if they are in a different order.)
9	Laura arrived at school at 8:23 AM. If Laura had arrived at school half an hour earlier, she would have arrived 19 minutes before the start of school. What time does Laura's school start?
10	What is the perimeter, in inches, of a square with area 49 square inches?

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4th Grade – April 21, 2006

Relay Contest

RELAYS - 5 minutes per relay

*There is no talking during this event and you must always be facing forward. Person #1 will be given an answer sheet(s) and will need to fill out the top. The proctor will hand out a strip of paper to each person. These need to be face down on your desk until it is time for the relay to start. Once the relay begins, everyone may turn over their strip of paper and begin working. You may write on the strip of paper to come up with your answer. However, when person #1 figures out his/her problem, he/she will record **just his/her final answer** on the answer sheet and pass only the answer sheet back to the person behind. This continues until person #4 puts an answer on the answer sheet and gives it to the proctor. A correct answer from person #1, #2 and #3 is worth 1 point each. A correct answer from person #4 is worth 2 points making each relay worth 5 points. You will see the expression **TNYWG** [Proctor: write this on the board] which means: "the number you will get". This is where you put your teammate's answer that they pass back to you, and then you should be able to solve your question. Once the relay begins, turn over your strip of paper and **make sure you have the right person number**. Remember, no talking and remain facing forward to avoid being disqualified!*

	Practice Relay	Answer
Person 1	4 x 2 x 3	24
Person 2	TNYWG ÷ 3	8
Person 3	TNYWG x 4	32
Person 4	TNYWG - 25	7
	Relay #1	Answer
Person 1	23 - 17	6
Person 2	The number of inches in TNYWG feet.	72
Person 3	TNYWG ÷ 3	24
Person 4	The number of feet in TNYWG inches.	2
	Relay #2	Answer
Person 1	If NASA can launch a space shuttle for 1/2 billion dollars, how many can it launch with 3 billion dollars?	6 [shuttles]
Person 2	If 2/3 of all scheduled launches are cancelled due to inclement weather, how many of TNYWG launches will actually launch?	2 [launches/ shuttles]
Person 3	If a space shuttle carries 7 people, how many people will be launched into space in TNYWG launches?	14 [people]
Person 4	If half of all people launched into orbit space walk, how many people out of TNYWG will actually space walk?	7 [people]

"Math is Cool" Championships – 2005-06

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4th Grade – April 21, 2006

Final Score:

KEY

School Name_____Team #_____

Proctor Name_____Room #_____ Division: _____

Mental Math Contest

When it is time to begin, I will read the first question twice. You may not do any writing or talking while arriving at a solution. Once you have a solution, record it on the sheet in front of you. **You may not erase or cross out answers once you have written an answer down.** *If there are eraser marks or crossed out answers, they will be marked wrong. Once all students have laid their pencils on the desk, another question will be asked. If a student doesn't lay his/her pencil down, the maximum wait time is 30 seconds from the second reading of the question before another question is asked. The value of each question is a one or zero. Each student will be asked four questions, then another member of your team will come up.*

PERSON 1 NAME:		1 or 0
1.1	What is the product of 9 and 8?	72
1.2	What is the average of 15, 20 and 25?	20
1.3	What is the quotient of 24 and 8?	3
1.4	What is the perimeter of a pentagon with side length 5?	25
PERSON 2 NAME:		
2.1	What is the product of 4 and 7?	28
2.2	What is the remainder when three hundred seventy two is divided by five?	2
2.3	What is the quotient of 81 and 9?	9
2.4	How many pints are in a gallon?	8 [pints]
PERSON 3 NAME:		
3.1	What is the product of 6 and 7?	42
3.2	What is the difference between 34 and the product of 2 and 12?	10
3.3	What is the quotient of 64 and 8?	8
3.4	How many feet are in three and one-third yards?	10 [feet]
PERSON 4 NAME:		
4.1	What is the product of 12 and 3?	36
4.2	What is three-quarters of 200?	150
4.3	What is the difference between 91 and 15?	76
4.4	How many nickels are in 4 dollars?	80 [nick]

"Math is Cool" Championships – 2005-06

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4th Grade – April 21, 2006
Division 1

COLLEGE KNOWLEDGE BOWL ROUND #1

#	Problem	Answer
1	If an elevator can hold 13 people, how many can 3 elevators hold?	39 [people]
2	A new parking garage can hold one and a half times the number of cars as the old garage, which held 500 cars. How many cars will the new garage hold?	750 [cars]
3	What is the area of a square with perimeter 32?	64
4	I'm thinking of a number between 1 and 23 that is divisible by 2, 3, 4, and 6. What is it?	12
5	How many days have passed in 96 hours?	4 [days]
6	How many sides does a heptagon have?	7 [sides]
7	When will it be 2 hours and 17 minutes past 7:54 pm?	10:11 pm
	Extra Problem – Only if Needed	
8	How many digits are in 9 squared?	2 [digits]

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Division 1

COLLEGE KNOWLEDGE BOWL ROUND #2

#	Problem	Answer
1	If the digits in 2006 are multiplied, what is the resulting product?	0
2	If Sean was born in 1987, what is his youngest possible age at any time in 2005, in years?	17 [years]
3	A piano has 88 keys, with 36 of them being black. How many are white?	52 [keys]
4	How many faces does a cube have?	6 [faces]
5	Nine consecutive numbers have a sum of 99. What is the average of these numbers?	11
6	A man walks 3 feet into a street and is 1/8 the way to the other side. How much farther, in feet, must he walk to get the other side?	21 [feet]
7	What is the probability of rolling an 8 on a fair 8 sided die?	1/8
	## Extra Problem – Only if Needed	
8	What is the largest two digit prime number?	97

"Math is Cool" Championships – 2005-06

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4th Grade – April 21, 2006

Division 1

COLLEGE KNOWLEDGE BOWL ROUND #3

#	Problem	Answer
1	A house has 27 windows, only one-third are open. How many windows are closed?	18 [win]
2	How many odd numbers are between 10 and 40?	15 [numbers]
3	A three ring binder has 42 pages contained in the rings. How many holes were punched?	126 [holes]
4	The light in a lighthouse revolves 20 times a minute. How many revolutions will be completed in one hour?	1200 [rev]
5	What is 64 minus the quantity 8 times 8?	0
6	Today, Frank is 4 years older than Tom. In five years how many years older will Frank be than Tom?	4 [years]
7	What is the perimeter of a regular octagon with side length of four and one-half?	36
	Extra Problem – Only if Needed	
8	What is 24 x 3?	72

"Math is Cool" Championships – 2005-06

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4th Grade – April 21, 2006

Division 2

COLLEGE KNOWLEDGE BOWL ROUND #1

#	Problem	Answer
1	What is the sum of 8 nines and 3 squared?	81
2	What is 33 + 55 + 25 + 2 = _____?	115
3	Sam won the fifty meter freestyle race with a time of 2 minutes. He then won his next race with a time of 3 minutes. What was his average time for the two races, in minutes? [Express answer as a decimal.]	2.5 [min]
4	What is the perimeter of a rhombus with side length 11?	44
5	During a basketball game, Jones scored 3 points. Henry scored twice as many points as Jones and Tina scored 3 times as many points as Henry. How many points did Tina score?	18 [points]
6	What do I get if I divide 12 by 12 and then multiply by 12?	12
7	Evaluate: 128 plus the quantity 82 divided by 2	169
	## Extra Problem – Only if Needed	
8	What is the units or ones place of 99 times 996	4

"Math is Cool" Championships – 2005-06

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4th Grade – April 21, 2006

Division 2

COLLEGE KNOWLEDGE BOWL ROUND #2

#	Problem	Answer
1	Eleven times what number is 132?	12
2	Jim has five different pairs of shorts and 5 different shirts. How many different combinations can be made?	25 [comb]
3	What time is it 2 hours and 17 minutes before 4:37 pm?	2:20 pm
4	133 is 47 more than what number?	86
5	What is 8 divided by 2 divided by 2 times 1?	2
6	What is the circumference, in inches, of a circle with radius of 8 inches?	16π [inches]
7	What do I get if I divide 20 by 10 and then multiply by 11?	22
	## Extra Problem – Only if Needed	
8	Johnny bought new socks at the Gap that cost $4.40. Before he paid for the socks, he realized he only had quarters. To the nearest whole quarter, how many quarters did Johnny need to pay?	18 [quarters]

"Math is Cool" Championships – 2005-06

Division 2

COLLEGE KNOWLEDGE BOWL ROUND #3

#	Problem	Answer
1	What is the area of a triangle with a base of 7 and a height of 10?	35
2	Demitri left for school at 8 am. He walked to Jim's house which took 13 minutes and then walked to the basketball court which took him 15 minutes. He and Jim played for 20 minutes and then walked the remainder of the distance to school which took 8 minutes. At what time did they arrive at school?	8:56 AM
3	While signing copies of her new book, <u>Harry Potter and the Half Blood Prince</u>, J.K. Rowling used all letters of the alphabet that came after I but before X. How many letters did she use?	14 [letters]
4	What is 17 minus 16 plus 12 minus 4 minus 4 minus 3?	2
5	What is the probability of rolling an even number on a six sided die?	½ or 3/6
6	What time is it 2 hours and 23 minutes after 10:35 pm?	12:58 AM
7	James gets a monthly allowance of $7.50. How much money total does he get in allowance each year, in dollars?	[$] 90
	Extra Problem – Only if Needed	
8	What is the sum of all the one digit prime numbers?	17

"Math is Cool" Championships – 2005-06
4th Grade – April 21, 2006

School Name_____Team #_____

Proctor Name_____Room #_____

STUDENT NAME_____Division: _____

Individual Contest – Score Sheet
DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0			Answer	1 or 0	1 or 0
1	2006				21	390 [questions]		
2	24 [slices]				22	15		
3	350 [buttons]				23	1/2 or 3/6		
4	96 [hours]				24	81π		
5	104,157				25	12 [sides]		
6	446 [miles]				26	176 [years]		
7	5				27	17		
8	[$] 0.80				28	29th [day]		
9	[$] 3.51				29	2 and 15		
10	333				30	15 [th Step]		
11	162 [ft]				31	1/12 or 3/36		
12	376 [roses]				32	18		
13	Odd				33	1440 [meters]		
14	1,000 [hours]				34	12		
15	2 [factors]				35	96 [%]		
16	100 [watts]				36	12/51 or 4/17		
17	5				37	12 [camels]		
18	[$] 50				38	9 [times]		
19	4				39	3 [minutes]		
20	3				40	7:30 PM		

"Math is Cool" Championships – 2005-06
4th Grade – April 21, 2006

School Name_____Team #_____

Proctor Name_____Room #_____

Division: _____

Final Score:
KEY

First Score
(out of 18)

Team Multiple Choice Contest – Score Sheet

Correct responses are worth 2 points, incorrect responses are worth -1 point and no response is 0 points.

DO NOT WRITE IN SHADED REGIONS

	Answer	-1, 0 or 2	-1, 0 or 2
1	B		
2	C		
3	D		
4	E (he can't)		
5	A		
6	B		
7	A		
8	C		
9	C		

"Math is Cool" Championships – 2005-06
4th Grade – April 21, 2006

School Name_____Team #_____

Proctor Name_____Room #_____

Div: _____

Team Contest – Score Sheet

DO NOT WRITE IN SHADED REGIONS

	Answer	2 or 0	2 or 0
1	10 [seconds]		
2	3		
3	133 [miles]		
4	4		
5	[$] 2		
6	Friday		
7	90		
8	7 [ways]		
9	8:12 AM		
10	28 [inches]		